Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
5GAA Petition for Waiver to Allow	)	GN Docket No. 18-357
Deployment of Intelligent Transportation	)	
System Cellular Vehicle to Everything	)	
(C-V2X) Technology	)	

COMMENTS OF THE ASSOCIATION OF GLOBAL AUTOMAKERS, INC.

The Association of Global Automakers, Inc.[1] ("Global Automakers"), through its attorneys, hereby offers comments on the above-referenced Petition of the 5G Automotive Association ("5GAA") seeking a blanket waiver of Federal Communications Commission ("FCC" or "Commission") rules to allow Cellular Vehicle-to-Everything ("C-V2X") technology in the upper 20 MHz of the 5.850-5.925 GHz ("5.9 GHz") band.[2] With recognition of V2X deployments already underway in the 5.9 GHz band, Global Automakers is supportive of recent announcements that seek to broaden the deployment of V2X applications, including through the use of Dedicated Short Range Communications ("DSRC") and through the development of C-V2X. The current deployments already highlight the need to preserve the entire 5.9 GHz band for these life-saving services. Introduction of a new technology raises important questions about the 5.9 GHz band. Should the Commission facilitate co-existence of V2X technologies, we encourage a measured, data-driven approach to deployment, including testing and validation. While Global Automakers

[1] The Association of Global Automakers is a trade association based in Washington, D.C. that represents the U.S. operations of international motor vehicle manufacturers, original equipment suppliers, and other automotive-related companies and trade associations.

[2] 5GAA Petition for Waiver to Allow Deployment of Intelligent Transportation System Cellular Vehicle to Everything (C V2X) Technology, GN Docket No. 18-357 (Nov. 21, 2018) ("5GAA Petition"). Existing service rules limit 5.9 GHz deployments to Dedicated Short Range Communications ("DSRC") services.

members have differing views on which V2X communications protocols are optimal, and therefore the Association neither supports nor opposes the waiver, we believe a data-driven rulemaking process can help address these issues.

I. V2X SERVICES PROMISE REVOLUTIONARY ADVANCES IN AUTO SAFETY AND ARE BEING DEPLOYED TODAY

The Commission first designated the 5.9 GHz band for V2X services in light of "the substantial efforts by both Government and non-Government entities to develop… a National ITS Plan and Architecture addressing ways of using communications technologies to increase the efficiency of the nation's transportation infrastructure."[3] The Commission found in the resulting *Allocation Order* that the record "overwhelmingly supported" allocation of the band for V2X applications, finding that such services would "increase traveler safety, reduce fuel consumption and pollution, and continue to advance the nation's economy."[4]

V2X services are now being deployed on our nation's roadways in furtherance of the Commission's policy objectives. As the Michigan Department of Transportation explained to the Commission last year, "states, local agencies, and cities around the country…are actively deploying infrastructure and developing [vehicle-to-infrastructure] applications that are designed to…enhance road safety, reducing crashes and fatalities."[5] Automakers – including Toyota, GM

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[3] *Amendment of Parts 2 & 90 of the Commission's Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Serv. for Dedicated Short Range Commc'ns of Intelligent Transportation Servs.*, Notice of Proposed Rulemaking, 13 FCC Rcd 14321, 14324 ¶ 7 (1998).

[4] *Amendment of Parts 2 & 90 of the Commission's Rules to Allocate the 5.850-5.925 GHz Band to the Mobile Serv. for Dedicated Short Range Commc'ns of Intelligent Transportation Servs.*, Report and Order, 14 FCC Rcd 18221, ¶ 5 (1999).

[5] Letter from Kirk. T. Steudle, Director, Michigan Department of Transportation, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 13-49, at 2 (May 24, 2018) ("Michigan DOT Letter") *See also id.* (explaining that recent V2X infrastructure deployment includes deployment "in 26 states and cities in response to the American Association of State Highway Transportation Officials '[Signal Phase & Timing] Deployment Challenge").

and Ford – have similarly announced major commitments to deploy V2X in vehicles.[6]

While the FCC's 5.9 GHz service rules originally contemplated deployment of DSRC as the sole V2X technology, C-V2X has emerged as a potential competing option, with possible complementary usage pending further research in this area. The capabilities of DSRC and C-V2X substantially overlap, with the two technologies exhibiting more similarities than differences. Both DSRC and C-V2X are standards-based technologies with an evolution path to future development. DSRC, or 802.11-V2X, is based on IEEE standards, as will be IEEE Next Generation V2X (i.e. 802.11bd) ("IEEE NGV"). C-V2X, or LTE-V2X, is based on 3GPP standards, as will be next generation 5G-V2X.[7] Both DSRC and C-V2X support the entire range of communications necessary for V2X services: vehicle-to-vehicle ("V2V"), vehicle-to-infrastructure ("V2I"), vehicle-to-network ("V2N"),[8] and vehicle-to-pedestrian ("V2P"). Both V2X technologies further may be leveraged to support an expanded auto safety application ecosystem and to serve other public interest objectives, such as increasing mobility, decreasing congestion, improving fuel efficiency, and reducing emissions. Finally, both types of V2X technology intend to support further increasing vehicle autonomy, up to and including levels 4 and

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6 *See, e.g.,* Letter from Paul Hemmersbaugh, Chief Counsel and Policy Director, Transportation as a Service, GM to FCC Secretary Marlene H. Dortch, ET Docket No. 13-49, at 1 (July 13, 2018) (announcing GM's plans to offer vehicle-to-everything communications in a high-volume Cadillac crossover by 2023 and subsequently extend this technology to the entire Cadillac portfolio); Press Release, "Toyota and Lexus to Launch Technology to Connect Vehicles and Infrastructure in U.S. in 2021" (Apr. 16, 2018), http://corporatenews.pressroom.toyota.com/releases/toyota+and+lexus+to+launch+technology+connect+vehicles+infrastructure+in+u+s+2021.htm; Don Butler, Executive Director, Ford Connected Vehicle Platform and Product, Ford Motor Company, "How 'Talking' and 'Listening' Vehicles Could Make Roads Safer, Cities Better," (Jan. 7, 2019), https://medium.com/@ford/how-talking-and-listening-vehicles-could-make-roads-safer-cities-better-f215c68f376f ("Ford Announcement").

7 For simplicity, LTE-V2X and 5G-V2X will be referred to herein, collectively, as C-V2X.

8 Global welcomes the distinction the 5GAA Petition introduces between V2I and V2N services. *See* 5GAA Petition at 5-6. Some V2X services involve communication between a vehicle and smart infrastructure, such as a stop light. Such services are properly characterized as V2I. In other instances, a vehicle communicates with an off-vehicle receiver for the purpose of off-loading non-latency sensitive communications to a network for processing. Such a network may be a CMRS network or other network. These communications are properly characterized as V2N.

5 autonomy as defined by the Society of Automotive Engineers ("SAE").

The emergence of C-V2X and IEEE NGV as complements to DSRC opens the door for more innovation in the V2X space. The developments in this area have moved policymakers past the question of whether the entire 5.9 GHz band is needed to bring the V2X vision to reality – a question the entire auto-ecosystem as well as the U.S. Department of Transportation ("DOT") has answered with a resounding "yes"[9] – to evaluating how implementation should occur. Such implementation raises challenges because DSRC and C-V2X cannot easily share spectrum on a co-channel basis. The existing 5.9 GHz band plan and SAE channel plan provide for certain applications across all seven channels of the band.[10] As discussed above, numerous DSRC deployments have been made or are in development consistent with this band and channel plan. It is therefore essential that the Commission consider how expanded use of the 5.9 GHz band may impact existing deployments.

Global Automakers appreciates the comparative data that 5GAA has provided about the performance of C-V2X relative to DSRC and is particularly interested in test data regarding

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[9] *See* Press Release, Alliance of Automobile Manufacturers, Association of Global Automakers, The Intelligent Transportation Society of America, The 5G Automotive Association, The American Association of State Highway and Transportation Officials, American Trucking Associations and The Motor & Equipment Manufacturers Association, "Multi-stakeholder Statement on Preserving the 5.9 GHz Band" (Oct. 24, 2018), https://autoalliance.org/2018/10/24/multi-stakeholder-statement-preserving-5-9ghz-band/ (explaining that the auto industry is "on the cusp of a major breakthrough in vehicle connectivity and safety innovations" and that "[t]he entire 5.9 GHz band is needed to achieve the full benefit of these communication technologies in the years to come"); Press Release, National Highway Traffic Safety Administration, "Statement on Safety Value of 5.9 GHz Spectrum" (Oct. 24, 2018), https://www.nhtsa.gov/press-releases/us-department-transportations-national-highway-traffic-safety-administration-issues, (explaining that "[t]he automotive industry and municipalities are already deploying V2X technology and actively utilizing all seven channels of the 5.9 GHz band and, accordingly, "[p]reserving the 5.9 GHz band for transportation communications is essential to public safety today and in the future"); Remarks of Heidi King, Deputy Administrator, National Highway Traffic Safety Administration, for the Keynote Address at ITS America, Detroit (June 5, 2018), https://www.nhtsa.gov/speeches-presentations/keynote-address-its-america, ("The Department remains supportive of priority use of the 5.9 GHz band for innovative transportation applications that can enhance safety and mobility.").

[10] *See* 47 C.F.R. § 2.106, n. NG160; Letter from Scott D. Delacourt, Counsel to Global Automakers, to Nicholas Degani, Senior Counsel, FCC Chairman Ajit Pai, Re: ET Docket No. 13-49, Attachment at 1-5 (filed June 28, 2017) ("2017 Ex Parte").

enhanced performance in line-of-sight and other areas.[11] Advancing the capabilities of V2X services is a shared objective of DSRC and C-V2X proponents. Global Automakers welcomes the opportunity to engage with regulators – including the FCC, DOT, and the National Telecommunications and Information Administration ("NTIA") – to expeditiously resolve outstanding issues and to make the V2X future a reality.

II. C-V2X USE OF THE 5.9 GHZ BAND RAISES A NUMBER OF IMPORTANT QUESTIONS THAT WARRANT EXPEDITIOUS RESOLUTION

The Commission expeditiously should resolve issues raised by DSRC/C-V2X co-existence in the 5.9 GHz band. Four issues bear further exploration: (1) basic safety message ("BSM") support; (2) channel usage; (3) real world safety testing; and (4) impact on deployment. Each of these is addressed in turn.

BSM Support. V2X technology is based around the ability to transmit and receive the basic safety message, which gives key data about a moving vehicle such as its size, position, speed, and heading. The SAE channel plan designates Channel 172, located at 5.855-5.865 GHz, for the BSM for DSRC services.[12] The 5GAA Petition, by contrast, seeks authority to operate only in the top 20 MHz of the band (5.905-5.925 GHz),[13] which means that the two technologies would use different BSMs. Because interoperability is essential to achieve the safety benefits of V2X, the Commission must ensure that policy supports continued innovation and interoperability solutions.

Channel usage. The existing 5.9 GHz band plan provides for various safety applications to be provided across all seven channels, and OEMs and state DOTs have deployed and are deploying predominantly DSRC-equipped vehicles and infrastructure pursuant to that plan. The

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11 5GAA Petition at 14.

12 2017 Ex Parte, Attachment at 1-5.

13 *See* Petition at 1-2.

20 MHz of the band that 5GAA identified for C-V2X in its Petition encompasses two of those channels, both of which are designated for public safety services under the SAE channel plan.[14] Deployment of C-V2X at this frequency range will impact certain public safety services as DSRC operations will be prohibited from operating in those frequencies.[15] The Commission should evaluate the impact, including how standards may need to be updated.

Real world safety testing. While the 5GAA Petition indicates there has been extensive testing of the radiofrequency properties of C-V2X services,[16] there may be a need for additional real-world safety testing. Consistent with the need for a data-driven approach, more information is needed about the safety of specific C-V2X applications for use in vehicles before it safely can be used on public roadways. The automotive industry will continue to advance the testing and deployment of V2X and we encourage DOT and NHTSA to be engaged in support of this effort.

Impact on deployment. While 5GAA argues that grant of a waiver may expedite the deployment of V2X services and roadway safety, the Commission must take into account the impact on existing or planned deployments when determining whether and how to provide relief. A waiver runs the risk of pre-judging a rulemaking in which the implications of band plan changes would be comprehensively evaluated.

As the Commission expeditiously undertakes a robust, data-driven process to determine the best path forward for the 5.9 GHz band, experimental licensing may be a viable option to enable the further development of C-V2X services in the interim. Field testing will be needed and has been proposed, but such testing may be accommodated under existing or new experimental licenses without pre-judging a rulemaking.

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14 2017 Ex Parte, Attachment at 1-5.
15 *See* 5GAA Petition, Appendix D
16 *See* 5GAA Petition at 7-16, Exhibit B.

III. 5GAA POTENTIAL FUTURE PETITION FOR RULEMAKING

In order to resolve the issues surrounding potential co-existence of DSRC and C-V2X in the 5.9 GHz band and the possibility of expanding investment in life-saving V2X services, Global Automakers favors an efficient, data-driven regulatory process to answer the relevant questions.

The 5GAA Waiver Petition asserts that 5GAA plans to file a complementary petition for rulemaking in the near future.[17] Although it is possible that a waiver proceeding may produce a record sufficient to evaluate the key questions raised herein regarding the co-existence of DSRC and C-V2X, given the breadth of these questions and the narrow scope of the 5GAA Waiver Petition, an efficient, data-driven rulemaking would avoid prejudice to any party. This is particularly true given the availability of an experimental licensing option.

IV. CONCLUSION

Global Automakers respectfully urges the Commission to evaluate the 5GAA Petition for Waiver consistent with the comments provided herein.

Respectfully Submitted,

/s/ *Ellen Gleberman*
Ellen Gleberman
Steve Gehring
Paul Scullion
The Association of Global Automakers, Inc.
1050 K Street NW
Washington, DC 20001

Scott D. Delacourt
Sara M. Baxenberg
WILEY REIN LLP
1776 K St. NW
Washington, DC 20006

Counsel to the Association of Global Automakers, Inc.

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[17] 5GAA Petition at 2.